

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION

BOARD ORDER NO. R6T-2010-0015  
WDID NO. 6A020405008  
NPDES NO. CA0103209

WASTE DISCHARGE REQUIREMENTS AND  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

FOR

CALIFORNIA DEPARTMENT OF FISH AND GAME  
PAIUTE CUTTHROAT TROUT RESTORATION PROJECT

\_\_\_\_\_ Alpine County \_\_\_\_\_

The California Regional Water Quality Control Board, Lahontan Region (Water Board) finds:

1. Discharger

The California Department of Fish and Game (hereinafter Discharger) is responsible for carrying out a variety of fishery management activities. These activities are designed to protect and maintain valuable aquatic ecosystems and sport fisheries. The Discharger is also responsible under State and federal law for the restoration and protection of threatened and endangered species.

2. Project Purpose

The Discharger, in cooperation with the U.S. Fish and Wildlife Service (USFWS) and the U.S. Department of Agriculture, Humboldt-Toiyabe National Forest (USFS), proposes to use the aquatic pesticide rotenone as part of recovery efforts for Paiute Cutthroat Trout, *Oncorhynchus clarki seleniris*, at Silver King Creek. Paiute Cutthroat Trout is one of the rarest subspecies of trout in North America, indigenous only to the Silver King Creek watershed. Paiute Cutthroat Trout was listed by the USFWS as federally endangered on October 13, 1970 (Federal Register 35:16047) and reclassified as federally threatened on July 16, 1975 (Federal Register 40:29863). Rotenone will be used to eradicate introduced fish species that can out-compete and interbreed with Paiute Cutthroat Trout, from portions of Silver King Creek and associated tributaries, prior to introduction of the native trout.<sup>1</sup>

<sup>1</sup> U.S. Fish and Wildlife Service (USFWS), 2004. Revised Recovery Plan for the Paiute Cutthroat Trout (*Oncorhynchus clarkia seleniris*). Portland, Oregon. ix + 105 pp.).

The Paiute Cutthroat Trout was successfully reintroduced to upper portions of Silver King Creek, above a natural fish barrier (Llewellyn Falls), following rotenone treatments in 1991, 1992, and 1993. The Discharger is concerned that non-native fish from below this barrier could be introduced by humans into the area where the pure population of Paiute Cutthroat Trout has been reestablished, threatening restoration efforts. The current project would help safeguard the restoration of Paiute Cutthroat Trout by re-introducing the endangered fish to six miles of the main-stem Silver King Creek downstream of Llewellyn Falls, and five miles of associated tributary streams, all of which comprise the historic range of the fish.

This project is identified in the USFWS Revised Recovery Plan for the Paiute Cutthroat Trout (2004)<sup>1</sup> as Priority 1: an action that must be undertaken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future.

### 3. Rotenone

Rotenone is a naturally-occurring pesticide found in the roots of certain plants. It is used for insect control and for fisheries management. Rotenone acts by interfering with oxygen use. It is especially toxic to fish because it is readily absorbed through the gills.

The California Department of Pesticide Regulation (DPR) regulates rotenone as a restricted material. Commercial rotenone formulations contain certain "inert" ingredients (solvents, dispersants, emulsifiers, etc.) as well as the active ingredient rotenone.

The active ingredient rotenone and some of the inert ingredients are potentially toxic chemicals. Chemical concentration, duration and route of exposure must all be considered in determining potential risk to non-target organisms. At the concentrations proposed for the Silver King Creek project, the rotenone formulations will be toxic to fish and may be toxic to other gill breathing organisms such as amphibians in aquatic life stages, and aquatic organisms such as invertebrates. There is no evidence of adverse effects to humans or terrestrial wildlife such as deer from incidental contact (for example, through drinking water) with rotenone formulation ingredients applied to surface waters at concentrations typical of fishery management projects.

Under normal field conditions (water temperature greater than 5 °C), when applied to water, rotenone breaks down naturally to non-toxic substances via photooxidation and biodegradation within approximately five days. Inert ingredients in rotenone product formulations are generally more volatile chemically, and are subject to dissipation by volatilization, as well as photooxidation and biodegradation, typically dissipating within two weeks under natural, normal conditions. Both rotenone and inert formulation ingredients will be detoxified by oxidation with potassium permanganate in the project neutralization zone at an accelerated rate of between 15 to 30 minutes. Rotenone binds readily to organic matter in soil where it is held in place and is detoxified by natural processes such as microbial biodegradation. Consequently, rotenone does not persist as a pollutant in groundwater.

#### 4. Project Location

The Discharger will apply rotenone formulation and potassium permanganate into Silver King Creek and associated tributaries between Snodgrass Creek (Silver King Canyon) and Llewellyn Falls (see map, Attachment A). The project area is within the East Fork Carson River Hydrologic Unit, Markleeville Hydrologic Area (Hydrologic Unit #632.10).

#### 5. Basin Plan

In compliance with the Porter-Cologne Water Quality Control Act, the Water Board adopted an updated *Water Quality Control Plan for the Lahontan Region* (Basin Plan) that became effective on March 31, 1995. The Basin Plan incorporates State Water Resources Control Board (State Water Board) plans and policies by reference, contains beneficial use designations and water quality objectives for all waters of the Lahontan Region, and provides a strategy for protecting beneficial uses of surface and ground waters throughout the Lahontan Region. The Basin Plan can be viewed or downloaded on the Internet at [http://www.swrcb.ca.gov/rwqcb6/BPlan/BPlan\\_Index.htm](http://www.swrcb.ca.gov/rwqcb6/BPlan/BPlan_Index.htm), reviewed at the Water Board office, or purchased at a nominal cost. This permit implements the Basin Plan.

#### 6. Water Board Policy for Discharger Rotenone Use

In 1990, the Regional Board adopted Resolution No. 6-90-43, amending the Basin Plan to permit limited use of the fish toxicant rotenone by the Department of Fish and Game (DFG). The Regional Board and the Discharger entered into a 1990 MOU to facilitate implementation of the amendments. The MOU specifies the detailed information to be provided by the DFG (Discharger) to the Regional Board before undertaking a rotenone application project, and the type of pre- and post-project monitoring to be undertaken. It also sets forth the criteria to be used by the Regional Board Executive Officer in evaluating rotenone application projects. The Basin Plan rotenone policy allows use of rotenone by the DFG (Discharger) for certain specific types of fishery management activities, including restoration or enhancement of threatened or endangered species. Eligibility criteria and conditions are set forth in Chapter 4 of the Basin Plan. For DFG (Discharger) projects meeting the eligibility criteria and conditions, the Basin Plan rotenone policy allows the Water Board the ability to grant the Discharger a variance from meeting Basin Plan water quality objectives (such as the pesticides and toxicity objectives) that would otherwise apply.

DFG (Discharger) Requirements to qualify for a variance to execute rotenone projects are given in Chapter 4 of this Basin Plan, under the section entitled "Rotenone Use in Fisheries Management," and are listed in section 14 of this Order. Water quality objectives for rotenone are in Chapter 3 of this Basin Plan, under the

section entitled "Water Quality Objectives for Fisheries Management Activities Using the Fish Toxicant Rotenone." This includes rotenone project specific water quality objectives for color, pesticides, species composition, and toxicity, which are covered in detail in the Monitoring and Reporting Program Section of this Order.

## 7. Reason for Action

In 2001, the Ninth Circuit Court of Appeals held that point-source discharges of pollutants associated with use of aquatic pesticides in waters of the United States require a National Pollutant Discharge Elimination System (NPDES) permit if the pollutant leaves any residue in the water after its application that would qualify as a chemical waste product. (Headwaters, Inc. v. Talent Irrigation District<sup>2</sup>) In 2005, the Ninth Circuit further held that the use of aquatic pesticides applied intentionally and in accordance with the EPA-approved FIFRA label does not require an NPDES permit if there are no unintended effects associated with the use of the product and no residue remains after the pesticide performs its intended function. (Fairhurst v. Hagener)<sup>3</sup> In 2009, the Sixth Circuit Court of Appeal vacated EPA's regulation exempting pesticides applied in accordance with the FIFRA label from NPDES permit requirements as inconsistent with the Clean Water Act. (National Cotton Council of America v. U.S. E.P.A.)<sup>4</sup> Accordingly, because of the likelihood of unintended effects on macroinvertebrates from the application of rotenone at some or all project locations, the discharge of pollutants associated with the application of rotenone for the Silver King Creek Project requires an NPDES permit.

## 8. Project Description

The Discharger proposes to apply rotenone in September 2010, with a second treatment planned for August or September 2011. A third treatment could be scheduled for 2012 if it is necessary to ensure complete eradication of non-native fish (for the purposes of this permit, non-native fish refer to any fish species capable of interbreeding with pure Paiute Cutthroat trout (PCT), or capable of significant competition with PCT for their ecological niche in Silver King Creek).

Under this permit, the Discharger will use CFT Legumine. Use of other formulations is not authorized under this permit.

CFT Legumine: The CFT Legumine<sup>TM</sup> formulation contains approximately 5% rotenone, 10% methyl pyrrolidone (MP), 60% diethylene glycol monoethyl ether (DEGEE), 17% Fennodefo 99<sup>TM</sup> (Fennodefo), and 3% other compounds (CDFG, 2007).<sup>5</sup> The two primary inactive carrier components in CFT Legumine<sup>TM</sup> are MP and DEGEE, which comprise approximately 93 percent of the formulation by weight. Both of these

<sup>2</sup> Headwaters, Inc. v. Talent Irrigation District, (9<sup>th</sup> Cir. 2001) 243 F.3d 526.

<sup>3</sup> Fairhurst v. Hagener (9<sup>th</sup> Cir. 2005) 422 F.3d 1146;

<sup>4</sup> Nat'l Cotton Council of America v. U.S.E.P.A., (6<sup>th</sup> Cir. 2009) 553 F.3d 927.

<sup>5</sup> California Department of Fish and Game (CDFG). 2007. Lake Davis Northern Pike Eradication EIS/EIR.

chemicals are infinitely soluble in water and have an estimated organic carbon partition coefficient (i.e., the " $K_{oc}$ ") of 12, indicating their water solubility and tendency not to adsorb to sediment particles.<sup>4</sup> Based on their low Henry's Law constants, these chemicals do not readily volatilize from surface water, and neither chemical is expected to undergo hydrolysis or direct photolysis.<sup>4</sup>

Aerobic biodegradation would be the most important mechanism for the removal of 1-methyl-2-pyrrolidinone and diethylene glycol monoethyl ether from aquatic systems. The small amount of these chemicals that may volatilize into ambient air would be readily degraded by reaction with photochemically-produced hydroxyl radicals, with an atmospheric half-life of up to 12 hours (NLM, 2006).<sup>6</sup> The Fennodefo 99<sup>TM</sup> constituent in CFT Legumine facilitates emulsification and dispersion of the otherwise relatively insoluble rotenone. Two classes of constituents, polyethylene glycols (PEGs) and the solvent (alcohol) hexanol, are part of the inert additive Fennodefo 99<sup>TM</sup> in CFT Legumine, which also contains fatty acid esters. As stated in the "Screening Level Risk Analysis of Previously Unidentified Rotenone Formulation Constituents Associated with the Treatment of Lake Davis," (ENVIRON 2007)<sup>7</sup>, the fatty acid ester mixture in Fennodefo 99<sup>TM</sup> is likely derived from 'tall oil'. Tall oil has been independently reported as a mixture of naturally occurring fatty acids, resins and neutrals that are a by-product of wood pulp, and is a common constituent of soap formulations. The fatty acids in tall oil, principally oleic and linoleic acids, are naturally occurring constituents that are also part of the building blocks that make up fats and oils (triglycerides). Highly unsaturated fatty acids, like linoleic, are considered essential dietary constituents in humans, as they cannot be synthesized. Polyethylene glycols (e.g., propylene glycol) are common ingredients in a variety of consumer products, including soft drink syrups (as an antioxidant), in plasticizers, suntan lotions and antifreeze, among other uses.<sup>4</sup>

The structures and oral toxicities of the two most concentrated constituents in CFT Legumine are summarized below.

#### DIETHYLENE GLYCOL MONOETHYL ETHER

- \* Approximate concentration in formula: 569,000 mg/L
- \* Toxicology: RAT ORAL LD50: 4,700-9,740 mg/kg.
- \* Chemical formula: C<sub>6</sub>H<sub>14</sub>O<sub>3</sub>
- \* Chemical structure: C<sub>2</sub>H<sub>5</sub>OCH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>CH<sub>2</sub>OH

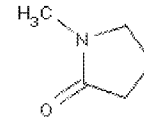


<sup>6</sup> National Library of Medicine (NLM). 2006. *Hazardous Substances Data Bank (HSDB)*. Toxicology Data Network (TOXNET), On-Line Database <toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>. National Institutes of Health, Department of Health and Human Services, Bethesda, MD. Reviewed April 2, 2006.

<sup>7</sup> ENVIRON International Corporation. 2007. Screening Level Risk Analysis of Previously Unidentified Rotenone Formulation Constituents Associated with the Treatment of Lake Davis. Prepared by Jeff Fisher for California Department of Fish and Game. September 17, 2007.

### 1-METHYL-2-PYRROLIDINONE

- \* Approximate concentration in formula: 90,000 mg/L
- \* Toxicology: RAT ORAL LD50: 3,914 mg/kg
- \* Chemical formula: C<sub>5</sub>H<sub>9</sub>NO



CFT Legumine™ will be applied to achieve a target concentration of 0.5 to 1.0 mg/L formulation (25 to 50 µg/L rotenone) to all flowing streams. The discharge will take place over a period of 4-6 hours. Rotenone will be applied to streams using drip stations, with hand spraying in backwater areas as necessary. Mini-drips and gel or sand matrices may be used on small seeps if the possibility exists that they provide a sufficient amount of fresh water that fish may use to escape from treated waters.

To contain the effects of rotenone within the project area and prevent a fish kill downstream of the Silver King Canyon, a neutralization station would be operated near Snodgrass Creek. The oxidizing agent potassium permanganate would be applied to Silver King Creek near Snodgrass Creek to neutralize rotenone, approximately 0.75 miles downstream of the lowest falls in Silver King Canyon.

Potassium permanganate would be applied at the resulting concentration of 2 to 4 mg/L. A generator powered auger would be used to apply the granular potassium permanganate. A back-up auger system would be on site in the event of primary auger failure. Potassium permanganate could also be applied from 30 to 55 gallon drums in a liquid form as a backup. The project area extends to the 30-minute travel time mark, which prior experience has shown to be approximately one-quarter to one-half mile downstream of the potassium permanganate infusion station (see Section 12 for a more detailed explanation of the neutralization zone). A 1 mg/L potassium permanganate residual would be maintained at the 30-minute travel time downstream location by increasing or decreasing the amount of permanganate to ensure complete neutralization of rotenone leaving the project area.

Block nets would be placed at selected locations throughout the project area to catch the dead fish. Dead fish collected at the block nets would be buried no closer than 300 feet from the stream and away from known camping areas to minimize bear/human interactions. The USFS would approve all burial sites before any ground disturbing activity occurred. Fish not collected at the block nets would be left in the stream to decompose and become part of the food chain. The Discharger evaluated the potential toxicity of these dead fish to foraging wildlife in its Programmatic Environmental Impact Report, *Rotenone Use for Fisheries Management, July 1994*, and concluded that foraging wildlife will not be adversely affected by consuming these fish.

During the treatment, water quality will be monitored. The monitoring would determine: 1) that effective piscicide concentrations of rotenone are applied; 2) that complete degradation of rotenone has occurred prior to the resumption of public contact; and 3) that rotenone toxicity does not occur outside the project area. An analytical laboratory would analyze water samples for rotenone and rotenolone concentrations as well as for volatile organic compound and semi-volatile organic compound concentrations. Table 1

gives the project treatment chemical concentration ranges and analytical reporting limits.

**Table 1. CFT Legumine® Formulation and Potassium Permanganate: Treatment Concentrations and Reporting Limits**

Chemical Name	Treatment Concentration (Est.) <sup>1</sup>	Reporting Limit
	ug/l	ug/l
Rotenone (active ingredient)	25.5 - 50.9	2
Rotenolone	3.67 - 7.34	2
1-Methyl-2-pyrrolidinone (Methyl pyrrolidone)	49.5 - 98.9	5
Diethylene glycol monoethyl ether (Diethylene glycol ethyl ether)	305 - 610	5
1-Hexanol	2.12 - 4.14	5
sec-Butylbenzene	0.00195 - 0.0039	0.3
1-Butylbenzene (n-Butylbenzene)	0.0120 - 0.0239	0.3
1,4-diethylbenzene	0.25 - 0.50	5
1,2,4-Trimethylbenzene	0.0174 - 0.0348	0.2
1,3,5-Trimethylbenzene (mesitylene)	0.002 - 0.004	0.1
1,2,4,5-tetramethylbenzene	0.201 - 0.402	5
Toluene	0.111 - 0.222	0.5
4-Isopropyltoluene (isopropyltoluene)	0.00255 - 0.0051	0.3
Methylnaphthalene	0.07 - 0.14	5
Naphthalene	0.127 - 0.253	5
Potassium Permanganate	2.0-4.0 mg/L	0.00288 mg/L

<sup>1</sup> Range corresponds to 0.5 to 1.0 mg/L rate of CFT-Legumine product application

## 9. Project Boundaries

The Basin Plan defines the project boundaries for rotenone projects as encompassing the treatment area, the detoxification area, and the area downstream of the detoxification station at Snodgrass Creek, up to a thirty-minute in-stream travel time. The project boundaries are determined in the field based on stream flow measurements immediately prior to treatment.

#### 10. Proposition 65 Considerations

Four inert ingredients present in one or both proposed rotenone formulations (N-methyl-2-pyrrolidone, toluene, trichloroethylene, and naphthalene) are on the Proposition 65 list of chemicals known to the state of California to cause cancer or reproductive toxicity.

The Proposition 65 statute is contained in California Health and Safety Code sections 25249.5-25249.13. Proposition 65 prohibits the discharge of chemicals known to cause cancer or reproductive toxicity. The California Department of Public Health is the state agency responsible for enforcing Proposition 65.

Section 25249.5 states that “No person in the course of doing business shall knowingly discharge or release a chemical known to the state to cause cancer or reproductive toxicity into water or onto or into land where such chemical passes or probably will pass into any source of drinking water.” Proposition 65 defines “person” for purposes of its prohibitions as “an individual, trust, firm, joint stock company, corporation, company, partnership, limited liability company, and association.” (Section 25249.11, subd. (a).) Proposition 65 specifically states that “person in the course of doing business” does not include “the state or any department or agency thereof or the federal government or any department or agency thereof.” (Section 25249.11, subd. (b).) Thus, because neither the state government nor the federal government nor their respective agencies and departments are “persons” or “persons in the course of doing business” within the meaning of Proposition 65, the prohibition in Section 25249.5 does not apply to the Discharger.

#### 11. Impacts to Non-target Aquatic Life—Benthic Macroinvertebrates

Rotenone treatment is expected to have short-term (yearly) effects on benthic macroinvertebrate communities (invertebrates are expected to repopulate treated areas following treatment and beneficial uses must be restored within two years of the final treatment). The Discharger conducted benthic macroinvertebrate monitoring studies before, during, and for three consecutive years following rotenone treatments that occurred in portions of the Silver King Creek basin in 1991 through 1993. The Discharger also conducted a study of rotenone impacts on macroinvertebrates in Silver Creek (Mono County), which was treated for three years from 1994 to 1996. (Trumbo et al., 2000a<sup>8</sup> and 2000b<sup>9</sup>). These studies suggested that rotenone may have short-term impacts (yearly) to sensitive aquatic invertebrates . . .” Based on those studies and the

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<sup>8</sup> Trumbo, J., S. Siepmann, and B. Finlayson. 2000a. Impacts of rotenone on benthic macroinvertebrate populations in Silver King Creek, 1990 through 1996. Office of Spill Prevention and Response, Administrative Report 00-5, March 2000. Pesticide Investigations Unit, Office of Spill Prevention and Response, California Department of Fish and Game. 40 p.

<sup>9</sup> Trumbo, J., S. Siepmann, and B. Finlayson. 2000b. Impacts of rotenone on benthic macroinvertebrate populations in Silver Creek, 1994 through 1998. Office of Spill Prevention and Response, Administrative Report 00-7, December 2000. Pesticide Investigations Unit, Office of Spill Prevention and Response, California Department of Fish and Game. 37 p.



metrics evaluated, the Discharger concluded that the data do not suggest any significant long-term (greater than one year, up to five years, the study period) impacts to invertebrates lasting beyond the study periods. Vinson and Vinson (2007)<sup>10</sup> could not find long term impacts of rotenone treatments to aquatic macroinvertebrates in the dataset they reviewed for the Silver King Creek basin.

The Discharger submitted the Silver King Macroinvertebrate Monitoring Plan, August 2007-2015, including plans for pre- and post-project macroinvertebrate surveys and statistical analysis. This monitoring plan incorporates recommendations by Vinson. The Discharger will implement in the Monitoring and Reporting Program as part of the current project.

At this time, no macroinvertebrate species have been identified that are strictly endemic to the Silver King Creek basin. However, several studies suggest that springs are likely habitat for rare and endemic species, such as spring snails, which have not been detected in macroinvertebrate surveys. Mitigation measures to protect potential rare and endemic species include using the lowest concentration of rotenone formulation yet still maintaining efficacy of treatment, not treating headwater tributaries that are deemed fishless at time of treatment, and not treating springs and seeps that are determined to be fishless. Protocol for and protection of potential rare and/or endemic species involves: surveying springs and seeps in the project area for non-native fish, with subsequent flagging and mapping of fishless refugia, which will not be treated with rotenone (see Monitoring and Reporting Program for a more detailed description). Additionally, since treatment will occur in late summer/early fall, springs and ephemeral surface waters dry at the time of treatment will not be treated.

## 12. Impacts to Non-target Aquatic Life—Amphibians

Amphibians in the terrestrial life stage should not be affected by the rotenone treatment. However, amphibians in the gill breathing life stages are susceptible, if present.

Sierra Nevada yellow-legged frogs (formerly known as mountain yellow-legged frog) (*Rana sierrae*, formerly *muscosa*) are known to inhabit portions of the Silver King Creek basin. No Yosemite toads (*Bufo canorus*) have been found in the basin. Silver King is at the northern extent of the range of the Yosemite toad. Some toads were thought to be hybrids, and it is now thought that these were western toads (*Bufo boreas*). Sierra Nevada yellow-legged frogs and Yosemite toads are candidates for listing under the federal Endangered Species Act. The Discharger recently completed six years of amphibian surveys within the project area and nearby upstream areas. Although Sierra Nevada yellow-legged frogs have been found in certain areas upstream of the project area (Upper Fish Valley and Fly Valley Creek), none have been observed in the project

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<sup>10</sup> M. R. and D.K. Vinson. 2007. An analysis of the effects of rotenone on aquatic invertebrate assemblages in the Silver King Creek Basin, California. Moonlight Limnology. Report Prepared for the Humboldt-Toiyabe National Forest. 255 pp.

area. A few Western toad/Yosemite toad adult and terrestrial sub-adult hybrids were observed within the project area. Discharger biologists determined that during the August 2004 and 2005 surveys, tadpoles within the project area had already metamorphosed into terrestrial lifestages due to an early spring/summer and low water year.

The Discharger will conduct additional amphibian surveys immediately before treatment, according to protocols described in the Monitoring and Reporting Program. If adult or tadpole life stages of any threatened, endangered, sensitive, candidate or rare amphibians are found during pre-project surveys, they will be captured by net and relocated out of the project area to suitable nearby habitat.

### 13. Past Discharger Rotenone Projects in the Lahontan Region

The Discharger has completed several rotenone projects in the Lahontan Region since the late 1980s. Those projects included treatments of portions of the Upper Truckee River (Alpine County), Mill Creek (Mono County), Silver Creek (Mono County) Wolf Creek (Mono County), and the 1991-1993 treatments in upper portions of the Silver King Creek drainage for Paiute Cutthroat Trout restoration.

The Water Board waived waste discharge requirements for those projects. Following the Ninth Circuit Court of Appeal's decisions in Headwaters, Inc. v. Talent Irrigation District and Fairhurst v. Hagener, and the Sixth Circuit Court of Appeal's decision in National Cotton Council of America v. U.S. E.P.A., NPDES permits are required for the discharge of aquatic pesticides to waters of the U.S. if any residue remains after the pesticide has performed its intended function or there are any unintended effects of the use of the pesticide. Because of the likelihood of unintended effects on macroinvertebrates from the application of rotenone throughout the project area, there is no basis to waive waste discharge requirements for this rotenone treatment project.

On July 6, 2005, the Discharger received an NPDES permit from the State Water Board (Order No. 2005-0010-DWQ) for a rotenone treatment project in the Silver King Creek drainage for Paiute Cutthroat Trout restoration. Californians for Alternatives to Toxics and several other organizations and individuals filed suit in both state and federal court seeking to have the NPDES permit vacated and to enjoin the Discharger (in the state case) and USFS (in the federal case) from engaging in any acts in reliance on that permit.

The state case was filed in the Sacramento County Superior Court and the petitioners sought a writ of mandate (Case No. 050501160). On September 12, 2005, the Court denied the petitioners' application for a temporary restraining order. In so doing, the Court found a "strong and legitimate interest in preserving the Paiute cutthroat trout." The petitioners subsequently dismissed the state case after the federal district court issued an injunction barring the project.

The federal case was filed in the United States District Court, Eastern District of California (Case No. Civ. S-05-1633 FCD KJM). The district court issued a temporary restraining order on August 31, 2005 and a preliminary injunction on September 1, 2005, prohibiting USFS from conducting or allowing to be conducted any portion of the Paiute cutthroat trout restoration project. The Court found both that the plaintiffs demonstrated a strong likelihood of success on their claim that macroinvertebrates would be irreparably harmed and that they raised serious questions as to the adequacy of the USFS's Environmental Assessment and as to whether USFS should have conducted an Environmental Impact Statement.

On September 30, 2005, the Discharger requested that the State Water Board rescind the NPDES permit for the project. On October 20, 2005, the State Water Board rescinded the NPDES permit.

The Discharger has historically conducted several rotenone treatments in the Lahontan Region. These are detailed in the environmental document (USFWS/CDFG, 2010<sup>11</sup>). Lessons learned from these earlier treatments, involving both success and failure, were used to develop improved field methods using state-of-the-art equipment and a more robust command and control structure. The current project uses a precision dry-chemical permanganate dispensing auger that is inherently more reliable, with less potential for breakdown, error, freezing, etc., than the former system of dispensing permanganate solutions. The current command and control structure includes real-time field permanganate testing at the two-and thirty-minute stream travel times below the neutralization station, with immediate communication between neutralization station staff and the samplers. These three sites in the neutralization area will be attended by Discharger staff continuously, day and night, during project implementation.

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<sup>11</sup> USFWS/CDFG. 2010. Final EIS/EIR, Paiute Cutthroat Trout Recovery Project.

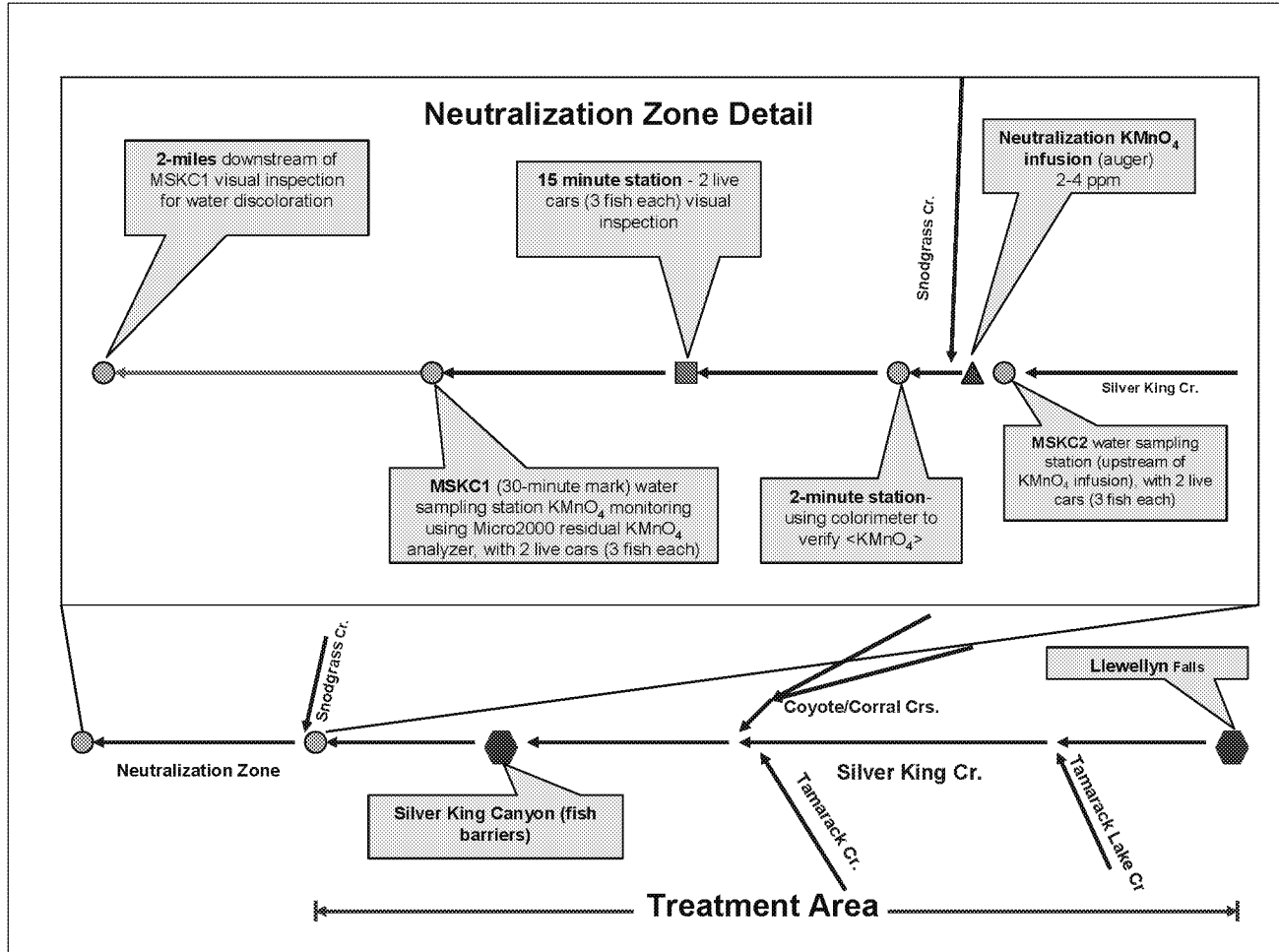


Figure 1: Silver King Creek Paiute Cutthroat Trout Restoration Project Treatment Area with Neutralization Zone Detail

Figure 1 depicts the chain of components in the neutralization system along Silver King Creek. From right-to-left, the upstream sampling station (MSKC2) with the first trout toxicity test station; the potassium permanganate (KMnO<sub>4</sub>) Neutralization infusion station; the first KMnO<sub>4</sub> sampling station at the two-minute stream travel time mark; the second trout toxicity test station at the 15-minute mark; the downstream sampling station (MSKC1) including the third trout toxicity test station located at the 30-minute stream travel time below the KMnO<sub>4</sub> infusion station; and the water color inspection station two miles downstream of MSKC1. The lower project boundary is at MSKC1, which also serves as the point-of-compliance for rotenone and other constituents in the product formulation. Two miles below MSKC1 is the point-of-compliance for the color water quality objective, as required by the Basin Plan, Chapter 3, "Water Quality Objectives for Fisheries Management Activities Using the Fish Toxicant Rotenone" section.

#### 14. Project Information Submitted by Discharger Meets Requirements for Variance

Chapter 4 of the Basin Plan, under the section entitled "Rotenone Use in Fisheries Management" requires that rotenone projects meet the following conditions:

1. The purpose of the proposed project must be one of the following:
  - (a) The restoration and protection of threatened or endangered species.
  - (b) The control of fish diseases where the failure to treat could result in significant damage to fisheries resources or aquatic habitat.
  - (c) The elimination of prohibited species (as defined in CA Fish and Game Code section 2118), where competition or predation from such species threatens valuable sport fish or native fish populations, or populations of other valuable organisms.

*The Discharger's proposed project is eligible by virtue of the above condition 1.(a) for restoration of a threatened species (Paiute Cutthroat trout).*

2. Chemical residues resulting from rotenone treatment must not exceed the narrative or numerical limitations established in Chapter 3 of this Basin Plan, under the section entitled "Water Quality Objectives For Fisheries Management Activities Using the Fish Toxicant Rotenone."

*The Discharger has provided detailed plans for effective and complete neutralization of rotenone and formulation products using potassium permanganate, refined by historic rotenone treatment experience (see Finding 13). Additionally the Discharger must execute a comprehensive chemical monitoring plan for compliance.*

3. Within two years of the last treatment for a specific project, a fisheries biologist or related specialist from the DFG (Discharger) must assess the restoration of applicable beneficial uses to the treated waters, and certify in writing that those beneficial uses have been restored. A project will be considered to have been completed upon written acceptance by the Regional Board's Executive Officer of such certification.

*This Order requires that the DFG (Discharger) perform an assessment of restoration of applicable beneficial uses of treated water and certify in writing that those beneficial uses have been restored.*

4. Based on information and project plans submitted by the DFG (Discharger), the Regional Board's Executive Officer must determine that the proposed project will meet all applicable provisions (including subsequent amendments or revisions) of this Basin Plan, the DFG's (Dischargers) Environmental Impact Report *Rotenone Use for Fisheries Management* (1994) regarding rotenone use. Whenever the language contained in the above-mentioned documents may overlap, the requirements that will provide the most restrictive protection of water quality shall apply. Furthermore, the Regional Board's Executive Officer must determine that the project meets all of the following additional criteria:

(a) The limitations on chemical residue levels referenced in Condition #2 (above) can be met.

*See explanation below Condition #2 (above).*

(b) The planned treatment protocol will result in the minimum discharge of chemical substances that can reasonably be expected for an effective treatment.

*The Discharger is using a rotenone formulation containing no harmful synergists, such as piperonyl butoxide, with the least concentration of inert ingredients of any commercially available. The application concentrations used are the least that is possible, and still meet project objectives.*

(c) Chemical transport, spill contingency plans, and application methods will adequately provide for protection of water quality.

*The Discharger is required under this Order to provide adequate, detailed spill contingency plans and chemical handling and disposal plans*

(d) Suitable measures will be taken to notify the public, and potentially affected residents.

*The Discharger has detailed public notification requirements in the environmental document (USFWS/CDFG. 2010), and is required under this Order to carry out those requirements.*

(e) Suitable measures will be taken to identify potentially affected sources of potable surface and ground water intakes, and to provide potable drinking water where necessary.

*This does not apply to this project—no water intakes exist within or near the project area.*

(f) A suitable monitoring program will be followed to assess the effects of treatment on surface and ground waters, and on bottom sediments.

*The attached Monitoring and Reporting Program covers surface water monitoring. Monitoring of ground waters, and on bottom sediments are not a concern for the reasons given above.*

(g) For each project, the DFG (Discharger) has satisfied the requirements of the California Environmental Quality Act (CEQA).

*The Discharger has provided an adequate, certified environmental document (USFWS/CDFG. 2010).*

(h) The chemical composition of the rotenone formulation has not changed significantly (based on analytical chemical scans to be performed by the DFG (Discharger) on each formulation lot to be used) in such a way that potential hazards may be present which have not been addressed.

*The Discharger is required under this Order to provide up-to-date and detailed lot analysis of the rotenone formulation before project implementation.*

(i) Plans for disposal of dead fish are adequate to protect water quality.

*This Order requires proper disposal of dead fish following a protocol that is adequate to protect water quality.*

The project meets the Basin Plan eligibility requirements, as it is a restoration project for a federally threatened species, the Paiute Cutthroat Trout.

The Water Board has considered this information submitted by the Discharger and determined that this project meets Basin Plan conditions and eligibility criteria for Discharger rotenone projects. On that basis, the project qualifies for the variance, established in the Basin Plan, from meeting water quality objectives that would

otherwise apply. The project is subject, however, to specific water quality objectives for rotenone use contained in the Basin Plan, and to numeric criteria for priority pollutants contained in the California Toxics Rule, unless the project qualifies for an exception.

#### 15. Consideration of Alternatives to Chemical Treatment

The Discharger has considered alternatives to chemical treatment in the environmental document, and determined that rotenone treatment is the superior option to ensure the complete eradication of non-native fish necessary to reestablish the Paiute Cutthroat Trout for this project. The Water Board has reviewed the alternatives, and concurs that there is currently no other effective option available in California at this time.

#### 16. Beneficial Uses of Silver King Creek

The beneficial uses of Silver King Creek as set forth and defined in the Basin Plan are: Municipal and Domestic Supply; Agricultural Supply; Groundwater Recharge; Water Contact Recreation; Non-contact Recreation; Commercial and Sport Fishing; Cold Freshwater Habitat; Wildlife Habitat; Rare, Threatened or Endangered Species; and Spawning, Reproduction, and Development.

#### 17. Effluent Limitations

NPDES permits for discharges to surface waters must meet all applicable provisions of sections 301 and 402 of the CWA. These provisions require controls that use best available technology economically achievable (BAT), best conventional pollutant control technology (BCT), and any more stringent controls necessary to reduce pollutant discharges and meet water quality standards.

Pursuant to section 122.44(k)(3) of Title 40 of the Code of Federal Regulations (CFR), Best Management Practices (BMP) may be required in NPDES permits in lieu of numeric effluent limits, to control or abate the discharge of pollutants, when numeric effluent limits are infeasible. Numeric effluent limits for pollutant discharges associated with the application of rotenone formulation and potassium permanganate neutralizing agent are not feasible, because in this case there is no definable "effluent" upon which limits can be placed. Rotenone and potassium permanganate are commercial products of formulated chemical composition, rather than an effluent waste stream from a controllable process or activity.

After being mixed with receiving waters and achieving their intended effect, excess and residual amounts of these materials and their breakdown products may be considered pollutants. This permit requires that the Discharger implement BMPs to control or abate pollutants in the receiving water, and comply with numeric receiving water limitations. Those BMPs constitute BAT and BCT and will be implemented to minimize the area and duration of impacts caused by the discharge of aquatic pesticides in the treatment area.



This approach will allow for restoration of water quality and the long-term protection of beneficial uses of the receiving water following completion of a treatment event.

#### 18. California Toxics Rule

The U.S. Environmental Protection Agency (USEPA) promulgated the California Toxics Rule (CTR, Code of Federal Regulations, Title 40, Part 131.38), establishing numeric criteria for priority toxic pollutants for the State of California. The State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy), which establishes procedures for implementing water quality standards in NPDES permits. Section 5.3.1 of the State Implementation Policy allows the Water Board to grant short-term or seasonal categorical exceptions from meeting the CTR priority pollutant criteria/objectives for:

“resource or pest management (i.e., vector or weed control, pest eradication, or fishery management) conducted by public entities or mutual water companies to fulfill statutory requirements, including, but not limited to, those in the California Fish and Game, Food and Agriculture, Health and Safety, and Harbors and Navigation codes.”

The Discharger qualifies for this exemption, as it is a public entity (specifically the Department of Fish and Game), engaged in fulfilling a statutory requirement to restore Federally-threatened species, such as Paiute Cutthroat trout.

Among other requirements, entities seeking an exception to complying with water quality standards for priority pollutants must submit California Environmental Quality Act (CEQA, Public Resources Code Section 21000, et seq.) documents.

The Discharger prepared an EIS/EIR in compliance with CEQA. The Silver King Creek rotenone project meets the qualifications for a categorical exception from meeting CTR priority pollutant criteria/objectives, and an exception is granted in the provisions of this permit. Therefore, effluent and receiving water monitoring for priority pollutants, as described in the State Implementation Policy, is not required for this project.

#### 19. California Environmental Quality Act (CEQA) Compliance

This action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.) in accordance with Section 13389 of the California Water Code.

Though the Water Board's adoption of this NPDES permit is exempt from CEQA, pursuant to California Code of Regulations, title 14, section 15096, subdivision (g)(2), the Water Board is nonetheless proceeding as a CEQA Responsible Agency. The Water Board has evaluated the Paiute Cutthroat Trout Restoration Project EIS/EIR for potentially significant impacts to water quality, concurs with the EIS/EIR's findings

regarding significant water quality-related effects, and finds that there are no additional feasible, less-damaging alternatives or mitigation measures that would accomplish the project's objectives except for rotenone application.

While adoption of this NPDES permit by the Water Board is exempt from CEQA, Section 5.3 of the State Implementation Policy (SIP) requires public entities requesting exceptions from meeting CTR priority pollutant criteria/objectives to submit CEQA documentation to the Water Board for approval. In 1994, the Discharger completed a Programmatic Environmental Impact Report entitled *Rotenone Use for Fisheries Management, July 1994*. In addition, in 2009 the US Fish and Wildlife Service and the Discharger completed a joint NEPA/CEQA environmental document "Paiute Cutthroat Trout Recovery Project, Silver King Creek, Humboldt-Toiyabe National Forest, Alpine County, California," and filed a CEQA Notice of Determination for the project with the Governor's Office of Planning and Research on March 17, 2010. This CEQA documentation has been submitted to the Water Board and Water Board hereby finds the Discharger in compliance with SIP, Section 5.3 CEQA requirements.

California Code of Regulations, title 14, section 15096, subdivision (g)(2) states: "When an EIR has been prepared for a project, the Responsible Agency shall not approve the project as proposed if the agency finds any feasible alternative or feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment."

California Code of Regulations, title 14, section 15096, subdivision (h) states: "The Responsible Agency shall make the findings required by Section 15091 for each significant effect of the project and shall make the findings in Section 15093 if necessary."

The Water Board's approval of this project will result in the following potentially significant and unavoidable impacts pursuant to California Code of Regulations, title 14, section 15091, subdivision (a), even with the implementation of all feasible mitigation:

- (1) The proposed Action could result in the loss of individual benthic macroinvertebrate taxa, potentially including rare (unquantified) and/or unidentified species endemic to Silver King Creek.
- (2) The proposed Action will result in temporary changes in species composition in non-target aquatic invertebrate communities.

Pursuant to California Code of Regulations, title 14, section 15093, subdivision (a)(1), "changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR" that apply to both impacts (1) and (2) above include:

- Removal of Tamarack Lake from the project area after extensive monitoring efforts during the Summer of 2009 that determined the lake to be fishless.

- Use CFT Legumine™ (liquid rotenone), a formulation that does not contain *pipeornyl butoxide* (pbo) a substance that has been shown to increase toxicity to aquatic macroinvertebrates. In addition, this formulation has been shown not to have adverse human health concerns.
- Use the lowest concentration of formulated rotenone, yet still maintain efficacy to reduce impacts non-target aquatic organisms.
- The Discharger will conduct pre-project amphibian surveys, and if any amphibians are encountered, the Discharger will relocate them to outside the project treatment area.
- The Discharger will identify fishless areas (tributary headwaters, springs, and seeps) that will not provide refugia for fish seeking to escape the chemical treatment and can be maintained in a fishless condition. These areas will serve as aquatic macroinvertebrate refugia for post-project recolonization. These designated non-treatment areas will be mapped (GPS) and flagged. These areas will not be chemically treated.

Pursuant to California Code of Regulations title 14, section 15093, subdivision (a)(1), a change or alteration required in, or incorporated into, the project to avoid or substantially lessen the significant environmental effect of impact (1) above only, is the identification by the Discharger of fishless tributary headwaters, springs, and seeps that will not provide refugia for fish seeking to escape the chemical treatment and can be maintained in a fishless condition. These designated non-treatment areas will be mapped (GPS), flagged, and will not be chemically treated. These areas will additionally serve as aquatic macroinvertebrate refugia for post-project recolonization. Additionally, the Water Board has imposed application specifications that prohibit the Discharger from applying rotenone when water temperatures are less than 5°C, to assure the effectiveness of treatment.

As a Responsible Agency, the Water Board pursuant to the California Code of Regulations, title 14, section 15093, subdivision (a)(3), the Water Board considers these potentially unavoidable adverse environmental effects. The adverse effects are "acceptable" because of the economic, legal, social, technological or other benefits of the project. These benefits include:

- Restoration of the native species Paiute Cutthroat Trout, representing heritage resources that future generations should be able to enjoy. These species of fish are of ecological, educational, historical, recreational, esthetic, economic, and scientific value to the people of this state, and the conservation, protection, and enhancement of these species and their habitat is of statewide concern.

- More than doubling the existing habitat for, and re-establishing Paiute cutthroat trout to its entire historic range. The reach of Silver King Creek between Llewellyn Falls and Silver King Canyon that will be recovered has more complexity and diversity than the existing habitat occupied by the Paiute cutthroat trout. The population estimates for the existing non-native hybridized populations downstream of Llewellyn Falls are approximately double that of the Paiute populations upstream of Llewellyn Falls.
- Removal of the principal threat to the continued existence of Paiute cutthroat trout by the eliminating sources of hybridized fish in close proximity to existing populations of the sub-species, which will effectively isolate the species in the Silver King Creek basin.
- Reduced threats from genetic bottlenecking and stochastic environmental events (e.g., forest fires and floods) through the expansion of habitat and connectivity with other populations within the Silver King Watershed.
- Accomplishing a critical and necessary step leading to the goal of eventually delisting the Paiute cutthroat trout from the federal Threatened Species List.
- Maintenance and expansion of fishless habitats in headwater habitats and lakes within the Silver King Creek watershed for the benefits of sensitive native amphibians and invertebrates.
- Restoration of native species in the Carson-Iceberg Wilderness is a benefit and the enhancement of the genetic diversity of the Paiute cutthroat trout will allow for less management by the Discharger, and would preserve and enhance the long-term wilderness and ecological values.

The Water Board finds that the biological and ecological, social, and other benefits of the project outweighs the significant and unavoidable adverse impacts of the project and is therefore "acceptable", pursuant to California Code of Regulations, title 14, section 15093, and consistent with the Discharger's statement of overriding considerations (CDFG, 2010<sup>12</sup>).

## 20. Nondegradation/Antidegradation

The Water Board has made certain findings consistent with State Water Resources Control Board (State Board) Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California", and with the Federal Antidegradation Policy contained in 40 CFR 131.12, that allowing the temporary degradation of water quality, which will result from implementation of the proposed project, is necessary to

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<sup>12</sup> CDFG, 2010. CEQA Findings of Fact And Statement of Overriding Considerations of the California Department of Fish And Game for the Paiute Cutthroat Trout Restoration Project, March 8, 2010.

protect and maintain important economic and social resources. Specifically, these resources are valuable fisheries and aquatic habitats within the Lahontan Region. Protection of these resources, and establishment of threatened and endangered species, is consistent with maximum benefit to the people of the state. The Basin Plan states:

*The temporary deterioration of water quality due to the use of rotenone by the DFG is justifiable in certain situations. The Water Board recognizes that the State and federal Endangered Species Acts require the restoration and preservation of threatened and endangered species . . . These resources are of important economic and social value to the people of the State, and the transitory degradation of water quality and short-term impairment of beneficial uses that would result from rotenone application is therefore justified provided suitable measures are taken to protect water quality within and downstream of the project area.*

Therefore, this Permit is consistent with the State non-degradation and federal anti-degradation policies.

## 21. Species Composition Considerations and Non-degradation/Anti-degradation

The Basin Plan rotenone policy requires that, within two years following the last treatment for a specific project, a fisheries biologist or related specialist from the Discharger must assess the condition of the treated waters, and certify in writing whether all applicable beneficial uses have been restored. Pursuant to the Basin Plan, that assessment must consider the condition of fish and invertebrate populations in the affected waters.

The Basin Plan water quality objectives for rotenone include a species composition objective that states:

“Where species composition objectives are established for specific water bodies or hydrologic units, the established objective(s) shall be met for all non-target aquatic organisms within one year following rotenone treatment [or within one year following the final rotenone application for multi-year projects].”

And:

“Threatened or endangered aquatic populations (e.g., invertebrates, amphibians) shall not be adversely affected. The Discharger shall conduct pre-project monitoring to prevent rotenone application where threatened or endangered species may be adversely impacted.

- I. No species composition objective has been established in the Basin Plan specifically for Silver King Creek or for the East Fork Carson River Hydrologic Unit.

However, Basin Plan anti-degradation provisions require protecting non-target aquatic organisms so that aquatic species composition is not degraded over the long-term. the Discharger has included measures to protect threatened and endangered species, which may be potentially present, in compliance with the Basin Plan requirement (see Section 11 and Monitoring and Reporting Program protocol "Identification and Protection of Sensitive Macroinvertebrate Refugia Habitats" for more information).

The Discharger will also conduct benthic macroinvertebrate monitoring to evaluate the assertion that rotenone treatment will not adversely affect populations of non-target aquatic organisms and beneficial uses of water over the long-term, and to better establish the duration of short-term impacts.

## 22. Notification of Interested Parties

The Water Board has notified interested agencies and persons of its intent to adopt an NPDES permit for the discharge, and has provided them with an opportunity to submit comments.

## 23. Consideration of Public Comments

The Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

## 24. NPDES Permit

This Order shall serve as an NPDES permit pursuant to section 402 of the Clean Water Act and shall take effect upon the date of adoption.

**IT IS HEREBY ORDERED** that:

### I. DISCHARGE SPECIFICATIONS

#### A. Receiving Water Limitations

The Discharger must comply with the following receiving water limitations. The discharge of rotenone formulation and potassium permanganate to surface waters shall not cause, or contribute to, violation of the following water quality objectives contained in the Basin Plan rotenone policy:

##### 1. Color

The characteristic purple discoloration resulting from the discharge of potassium permanganate shall not be discernible more than two miles downstream of project boundaries at any time. Twenty-four hours after shutdown of the

detoxification operation, no color alteration(s) resulting from the discharge of potassium permanganate shall be discernible within or downstream of project boundaries.

## 2. Pesticides

- a. The concentration of naphthalene outside of project boundaries shall not exceed 25 µg/L at any time.
- b. The concentration of rotenone, rotenolone, toluene, methyl pyrrolidone, diethylene glycol ethyl ether, 1-hexanol, sec-butylbenzene, n-butylbenzene, 1,4-diethylbenzene, 1,2,4-trimethylbenzene, mesitylene, 1,2,4,5-tetramethylbenzene, isopropyltoluene, and ethylnaphthalene outside of project boundaries shall not exceed the reporting limits<sup>13</sup> for these respective compounds at any time.
- c. After a two-week period has elapsed from the date that rotenone application was completed, no chemical residues resulting from the treatment shall be present at detectable levels within or downstream of project boundaries.
- d. No chemical residues resulting from rotenone treatments shall exceed detection levels in ground water at any time.

## 3. Toxicity

Chemical residues resulting from rotenone treatment must not exceed the limitations listed above for pesticides.

### B. Application Specifications

1. The Discharger must use only the rotenone formulations which it has previously identified and characterized for this project (specifically, CFT Legumine™). At least 21 calendar days before the implementation of the proposed project, the Discharger shall provide Water Board Executive Officer with the name, manufacturer and lot number of the commercial rotenone formulation to be used, as well as the results of organic analytical analyses for each lot of formulation to be used, performed by the DFG Water Pollution Control Laboratory or other laboratory certified in appropriate organic analyses, if applicable. Analytes shall include, at a minimum, rotenone, rotenolone, volatile organics, and semivolatile compounds. The chemical composition of the rotenone formulation must not be significantly changed, in such a way that potential hazards may be present which have not been addressed. Prior to the implementation of the proposed project,

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<sup>13</sup> "Reporting Limit" is defined as the minimum level that can be routinely detected using laboratory methodology and equipment common to current practices of the analytical laboratory community, and found acceptable to the regulatory community.

the Executive Officer will make a determination on whether the formulation has significantly changed or not, as it relates to anticipated adverse environmental effects.

2. Rotenone applications must be made in accordance with label specifications. Consistent with label detoxification requirements, formula concentrations may not exceed one part per million (50 parts per billion rotenone concentration).
3. Applications must be supervised by a licensed applicator in accordance with regulations of the Department of Pesticide Regulation.
4. Applications of rotenone and potassium permanganate must be made in compliance with the Basin Plan and the project EIS/EIR.
5. The Discharger must implement the Spill Contingency plan submitted with the 2010 Rotenone Application.
6. The Discharger must conduct macroinvertebrate surveys according to protocols described in the Monitoring and Reporting Program, including pre- and post-application surveys.
7. The Discharger must conduct thorough surveys of springs, seeps, and headwaters in the project area no more than two weeks prior to treatment according to the protocol given in the Monitoring and Reporting Program. The Discharger shall not treat any of these sites they determine to be fishless (where insufficient habitat or water volume exists at time of treatment to contain a fish). The Discharger shall communicate these locations to applicators through flagging and/or mapping. The Discharger shall submit a draft map of no treatment areas to the Water Board one day prior to treatment. **By November 1** of each year of any chemical treatment, the Discharger shall submit a final map certifying areas that received no rotenone application.
8. The Discharger must conduct additional amphibian surveys immediately before treatment, according to protocols described in the Monitoring and Reporting Program. If adult or tadpole life stages of any threatened, endangered, sensitive, candidate or rare amphibians are found during pre-project surveys, they will be captured by net and relocated out of the project area to suitable nearby habitat.
9. The Discharger is prohibited from applying rotenone treatments when water temperatures are below 5°C, to assure the effectiveness of treatment.



### C. General Requirements

1. During Project implementation, the Discharger is required to implement Best Management Practices. Required BMPs include, but are not limited to: applying rotenone in accordance with label instructions by a licensed applicator; using potassium permanganate to detoxify rotenone before it escapes the treatment area; applying the minimum concentration of chemicals determined necessary to achieve an effective rotenone treatment; maintaining and implementing a suitable spill prevention and response plan; applying rotenone only when ambient water temperatures are sufficiently high to promote its rapid post-treatment breakdown; and conducting water quality monitoring inside and outside the treatment area.
2. All project operations must be conducted consistent with plans and management practices contained in documents submitted by the Discharger prior to the adoption of this permit, including the Discharger's EIS/EIR for the project.
3. The Discharger must provide the public with adequate notice of the treatments, and post signs in the project area prior to treatment with appropriate warnings against public contact with water and fish while chemical residues are present, will bury the dead fish, and shall direct wilderness users to alternative potable water sources as appropriate.
4. Mechanical disturbance of soils (for example, to bury fish or construct earthen spill containment berms) in wetland or riparian habitats is prohibited.

## II. PROVISIONS

### A. Standard Provisions for NPDES Permits

The Discharger must comply with the "Standard Provisions for NPDES Permits," (Attachment B), which is made a part of this Order.

### B. Monitoring and Reporting

1. Pursuant to California Water Code Section 13383, the Discharger shall comply with Attachment C - Monitoring and Reporting Program No. R6T-2010-0015, which is made a part of this Order, and with any revisions thereto.
2. The Executive Officer may require additional monitoring pursuant to California Water Code Section 13267, as necessary, to establish the recovery of aquatic macroinvertebrate communities following treatment, or to ensure compliance with other requirements and conditions of this NPDES Permit.

### C. General Provisions for Monitoring and Reporting

The Discharger must comply with the "General Provisions for Monitoring and Reporting," (MRP Attachment 5), which is made a part of this Order.

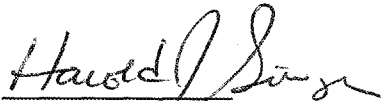
D. Expiration

This Order expires five years from the date of its adoption, on April 13, 2015.

III. EXCEPTION FROM PRIORITY POLLUTANT CRITERIA/OBJECTIVES GRANTED

A categorical exception from meeting priority pollutant criteria/objectives is hereby granted subject to the provisions of State Implementation Policy section 5.3. The Discharger shall comply with all provisions of section 5.3 that are applicable to categorical exceptions.

I, Harold J. Singer, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Lahontan Region, on April 14, 2010.



HAROLD J. SINGER  
EXECUTIVE OFFICER

- Attachments: A. Project Location Map  
B. Standard Provisions for NPDES Permits  
C. Monitoring and Reporting Program